

CONFIDENTIAL

NPIC/P&DS/D/6-726
17 January 1966

AUTOMATIC FOCUSING SYSTEM

Completion Date: 31 July 1966 (6 month program)

Cost:

Project Monitor:

[Redacted]

This contract will be a feasibility study and breadboard for an automatic focusing system. The approach will be an application of the principle employed in [Redacted] "Optical Detection for Objects Within an Adjustable Range." This device uses a wide-area non-linear photocell which vibrates in the direction of the optic axis. By sensing the phase of the fundamental component in the output signal, and also certain harmonic content, it is possible to determine the state of focus of the system.

The development of a successful automatic focusing system would be applicable to several major programs under development at NPIC such as automatic target recognition, automatic stereo scanning, and rear-projection viewing systems.

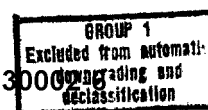
This is the only contract that NPIC has with [Redacted]

[Redacted]



Declass Review
by NIMA/DOD

CONFIDENTIAL



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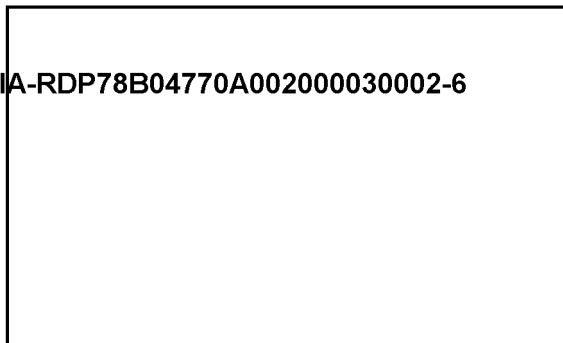
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2623



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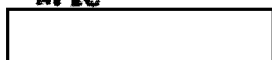
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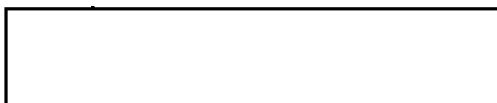
R&D

3 Copies for NPIC

1.

A Study to determine the feasibility
of utilizing Automatic Focusing
Systems in accordance with 1
Proposal No. ESU-6588 dated
7 October 1965

VENDOR:



25X1

Proposal in possession of



25X1

R&D Approval request signed by
on

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13 DEC 1965

MEMORANDUM FOR: Director, National Photographic Interpretation Center

SUBJECT: Research and Development Project Approval Request for a Study of an Automatic Focusing System

REFERENCE: Chief, Administrative Staff, O/DDI, Memorandum dated 4 February 1964: Approval of Research and Development Activities

In accordance with the authority delegated in paragraph 3. of the reference, it is requested that the study of an automatic focusing system as outlined in the attachment be approved. The estimated cost of this project is .

Colonel, USAF

Assistant for Plans and Development, NPIC

APPROVED:

ARTHUR C. LUNDAHL
Director, NPIC

16 DEC 1965

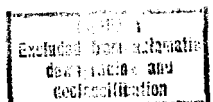
Date

Attachment: R&D Catalog Form

Distribution:

Orig & 2 - SS/LB
1 - P&DS

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DATE

8 November 1965

R & D CATALOG FORM

1. PROJECT TITLE/CODE NAME

Automatic Focusing System

2. SHORT PROJECT DESCRIPTION

A study to determine the feasibility of utilizing automatic focusing systems on specific equipment.

3. CONTRACTOR NAME

4. LOCATION OF CONTRACTOR

5. CLASS OF CONTRACTOR
Manufacturer6. TYPE OF CONTRACT
CPFF

7. FUNDS

FY 19 \$

FY 1966

FY 19 \$

8. REQUISITION NO.

N/A

9. BUDGET PROJECT NO.

NP-IO-9

10. EFFECTIVE CONTRACT DATE
(Begin - end)

January 1966 - June 1966

11. SECURITY CLASS.

A.A. - Confidential

T. - Unclassified

W. - Unclassified

12. RESPONSIBLE DIRECTORATE/OFFICE/PROJECT OFFICER TELEPHONE EXTENSION

DDI/NPIC/P&DS/

13. REQUIREMENT/AUTHORITY

If the system that is presently being studied proves successful, the basic principles will have application in any device that requires critical focus.

14. TYPE OF WORK TO BE DONE

Engineering Development

15. CATEGORIES OF EFFORT

MAJOR CATEGORY

Miscellaneous

SUB-CATEGORIES

Interpretation/Analysis

16. END ITEM OR SERVICES FROM THIS CONTRACT/IMPROVEMENT OVER CURRENT SYSTEM, EQUIPMENT, ETC.

Breadboard and final report -- Current focusing systems are too costly and complex, require periodic calibration, and cannot be applied to a variety of lens systems.

17. SUPPORTING OR RELATED CONTRACTS (Agency & Other)/COORDINATION

By virtue of contacts throughout industry and the Intelligence Community, it is concluded that no equivalent devices are currently in existence or under development.

18. DESCRIPTION OF INTELLIGENCE REQUIREMENT AND DETAILED TECHNICAL DESCRIPTION OF PROJECT (Continue on additional page if required)

Automatic focusing will be an integral part of other programs currently under development by NPIC. The major items are automatic stereo scanning and rear-projection viewing systems. In addition, a relatively inexpensive automatic focusing device could be applied to existing viewing equipment and photographic enlargers.

Correlation systems now in general use require a scanning system, an electronic multiplier, an electronic integrator -- together with the associated power (Contd)

19. APPROVED BY AND DATE

OFFICE

DEPUTY DIRECTOR

DDCI

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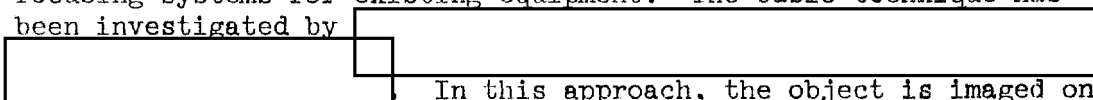
DEC 1965

R & D CATALOG FORM -- Continued...

NP-IO-9

18. supplies, deflection circuits, focusing circuitry, amplifiers, etc. Such equipment is too costly and complex to provide automatic focusing with typical reconnaissance viewers. Other systems in use, such as mechanical linkage devices, require periodic calibration, and these systems are designed to be used with specific lens systems. It would be extremely beneficial to develop a system that could be applied to a variety of lens systems.

This project will investigate the feasibility of automatic focusing systems for existing equipment. The basic technique has been investigated by



In this approach, the object is imaged on the face of a wide-area non-linear photocell which vibrates in the direction of the optical axis. By sensing the phase of the fundamental component in the output signal, and also certain harmonic content, it is possible to determine the state of focus, or de-focus of the system.

Results have been obtained for a three-dimensional "real world" object space involving a person approaching the optical system, which was fixed-focused for six feet. The successful results with three-dimensional object space, and with an optical system designed to operate over a considerable range of focus distances, indicate that the design of a system to operate on basically two-dimensional objects (photographic film), whose object distance varies over a relatively small range, has a high degree of feasibility.

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